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ABSTRACT

This executive summary of the final report of the National Day Care Study (NDCS) of March 1979 summarizes findings and policy recommendations, gives the background to the study and presents findings on quality and costs of center-based day care. Recommendations for federal regulations for preschool children, infants and toddlers, center characteristics, regulatory language and monitoring guidelines are indicated. The major cost/effects study of center-based day care for preschool children was conducted between 1974 and 1978 in 67 day care centers in Atlanta, Detroit and Seattle. Data from the major study and two supporting studies, a smaller research effort focusing on center day care for infants and toddlers and a national telephone survey of 3100 randomly selected centers, were analyzed. The NDCS found that higher quality care is associated with two low-cost ingredients (smaller groups of children and caregivers with child-specific education/training). The number of classroom staff per group (caregiver/child ratio) was not an important contributor to quality within the policy-relevant range of 1:5 to 1:10. Ratio was strongly related to differences in cost. Regulatory language and rules used to monitor compliance were found to influence center practices as much as the content of the regulations. The study concluded that revision of current federal day care regulations could allow the government to buy better care at slightly lower cost. More children could be better served within current budgets. (Author/RH)

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Prepared for the Day Care Division • Administration for Children, Youth and Families
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Executive Summary

ED168706

FINAL REPORT OF THE NATIONAL DAY CARE STUDY

CHILDREN AT THE CENTER

March, 1979

PS010474

By Abt Associates • Cambridge, Massachusetts
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FOREWORD

A child never stops developing. Inexorably drawn toward the pleasure of learning, young children reach out to capture all the "raw resources" (including adults) that are available to them. Using whatever is there, they move forward each week, sometimes each day, to improve some new skill, to add some new understanding of their universe.

The great wisdom of the day care community – parents, providers, specialists – has been to recognize this as a fact and to act upon it.

The final report of the National Day Care Study (NDCS) supports this wisdom. And by underpinning it with a careful, strong research base, this study can only augment further the knowledge and the commitment of the day care community.

The need for sound research data about the world of day care was widely recognized in 1974, when the Administration for Children, Youth and Families commissioned the National Day Care Study. In 1979, that need is even more urgent. During the past five years, the number of children in day care arrangements has increased significantly; children are beginning day care at an earlier age; and both parental needs for and government support of day care services are growing.

It is with great pride and satisfaction that this agency presents the Final Report of the National Day Care Study. The findings and conclusions presented in this first volume – *Children at the Center* – summarize research results on the benefits and the costs of critical center day care characteristics for preschool children.

The NDCS was regularly reviewed over the four-year effort by experts in day care and related fields to insure the study's objectivity and technical integrity. In addition, this agency and the study's two contractors – Abt Associates Inc. and SRI International – have sought to identify and incorporate the special concerns of minorities, parents and day care providers in the research process. I would like to extend special thanks to the head of the ACYF Day Care Division, Preston Bruce, and to Allen Smith, the study's project officer, for the many hours of effort which they have given to the study.

Although this first volume will be of interest and benefit to all segments of the day care community, the Federal Government will make first use of NDCS findings. Policymakers now have a research base on which to shape programs of day care center support and regulation for the 1980's.

Admittedly, research data alone cannot resolve the major issues surrounding Federal support and regulation of day care. However, I believe that the analyses and research results in this volume are a

major milestone in the formulation of responsible social policy as we strive to be supportive of families involved in the most important enterprise of our society -- the nurturance of children and youth.

Blandina Cardenas Ramirez
Commissioner, Administration for
Children, Youth and Families

March, 1979

EXECUTIVE SUMMARY: THE NATIONAL DAY CARE STUDY

SUMMARY OF FINDINGS AND POLICY RECOMMENDATIONS

The National Day Care Study (NDCS) investigated quality and cost in center-based day care for preschool children and, to a lesser extent, for infants and toddlers. The NDCS found that higher quality care is associated with two low-cost ingredients – smaller groups of children and caregivers having child-specific education/training. By itself, the number of classroom staff per group (caregiver/child ratio) was not an important contributor to quality within the policy-relevant range of 1:5 to 1:10. Ratio was, however, strongly related to differences in cost. **The study concludes that revision of current federal day care regulations could allow the government to buy better care at slightly lower cost – meaning that more children would be better served within current budgets.**

The NDCS recommends amendments to several key provisions of current federal day care requirements:

For regulations governing center care for children three, four and five, two principal changes are recommended: (1) amend the group composition requirement by (a) tightening the ceiling on the total number of children permitted in each group (group size), while (b) relaxing the minimum number of caregivers required per group (caregiver/child ratio); and (2) include a separate staff qualifications requirement specifying that staff providing direct care for children must have child-related education/training.

For regulations governing group composition for children under three, the NDCS recommends maintaining the currently required caregiver/child ratio and adding a group size requirement more stringent than that selected for preschool children. While data limitations preclude a specific caregiver qualifications recommendation, it is reasonable to suggest that infant/toddler caregivers should have child-related education/training and such education/training should be available.

In addition, the study shows that regulatory language and rules used to monitor compliance can have as much effect on center practices as the content of the regulations. The study makes a number of recommendations regarding interpretation of regulations and assessment of compliance.

Overview of the National Day Care Study

The Day Care Division of HEW's Administration for Children, Youth and Families commissioned Abt Associates Inc. of Cambridge, Massachusetts to carry out the NDCS. SRI International was selected to gather observation and test data. The major cost/effects study of center-based preschool day care was conducted between 1974 and 1978 at 67 day care centers in Atlanta, Detroit and Seattle. Data from the major study and two supporting studies – a smaller research effort focused on center day care for infants and toddlers, and a national telephone survey of 3100 randomly selected centers – were analyzed to answer three policy questions:

- QUALITY: **Are characteristics of centers which can be regulated (such as caregiver/child ratios, group sizes, and qualifications of caregivers) related to differences in the quality of care received by children under six?**
- COST: **What is the impact of these characteristics on center costs?**
- IMPACT OF REGULATIONS: **What are the potential impacts of alternative federal policies regulating center characteristics on the quality and cost of center day care?**

Findings for Preschool Children

The study's most important findings bear on the composition of the day care class (group size and caregiver/child ratio) and the qualifications of caregivers (education, experience and training).

For children three, four, and five years old,* the NDCS found the following.

Classroom Composition

- GROUP SIZE shows strong and consistent relationships to NDCS measures of quality, and only a slight relationship to center costs.
  - Quality: **Across all study sites, smaller groups are consistently associated with better care, more socially active children and higher gains on two developmental tests.**
  - Cost: **Variations in group size affect cost only slightly.**

* All discussions of five-year-old children refer to younger five-year-olds enrolled in preschool classrooms. Five-year-olds enrolled in private full-day kindergartens (common in states without kindergarten classes in the public schools) were not studied in the NDCS.

- CAREGIVER/CHILD RATIO shows a slight relationship to NDCS measures of quality, but ratio is strongly related to center costs.

  – **Quality:** **Caregiver/child ratio, within the policy-relevant range of 1:5 to 1:10, shows some relationships to measures of caregiver and child behavior, although the results are not strong or consistent. Ratio is not related to child test score gains.**

  – **Cost:** **Caregiver/child ratio is the strongest determinant of differences in center costs. Higher ratios (fewer children per caregiver) cost more. As the number of children decreases, cost per child rises at a progressively faster rate.**

Caregiver Qualifications

- CHILD-RELATED EDUCATION/TRAINING for caregivers shows a moderately strong and consistent relationship to NDCS measures of quality care but little relationship to costs.

  – **Quality:** **Caregivers with education/training relevant to young children deliver better care with somewhat superior developmental effects for children.**

  – **Cost:** **Caregivers with child-related education/training do not receive higher wages than other caregivers.**

- EXPERIENCE AND FORMAL EDUCATION show no important relationship to any NDCS measures of quality, and only a slight relationship to center costs.

  – **Quality:** **Neither total years of day care experience, nor total years of formal education, nor degrees or certificates unrelated to child care were systematically associated with caregiver or child behavior or child test score gains.**

  – **Cost:** **Caregivers with several more years of experience or education than average receive only two or three percent higher wages.**

Findings for Infants and Toddlers

For children six weeks to three years of age, the NDCS found the following.

3

Classroom Composition

Classroom composition is important to quality of care.* Both GROUP SIZE and CAREGIVER/CHILD RATIO are strongly related to NDCS measures of quality for infants and toddlers.

Caregiver Qualifications

Caregiver educational backgrounds are also associated with differences in quality for infants and toddlers. However, data limitations do not permit a determination of the precise education or training factors contributing to this finding.

Regulatory Recommendations

Current federal funding standards – the Federal Interagency Day Care Requirements (FIDCR) – apply only to federally subsidized care for children from low-income families. Originally established in 1968, the FIDCR were designed to promote development of and prevent harm to children in federally supported care. In 1975 the FIDCR were attached (in amended form) to Title XX of the Social Security Act, which provides funds to states for social services. The Title XX FIDCR require caregiver/child ratios of 1:4 for children from 6 weeks to three years, 1:5 for three-year-olds and 1:7 for four- and five-year-olds. Maximum group sizes are 15 for three-year-olds and 20 for four- and five-year-olds. No group size ceiling is set for children under three. There are no specific requirements under the Title XX FIDCR regarding staff qualifications, although the 1968 FIDCR stipulated that caregiving staff should have "training or demonstrated ability in working with children." Revision of these standards could potentially free some funds to serve additional children while maintaining or increasing quality of care.**

Regulations for Preschool Children

For preschool children (three-, four- and five-year-olds), the following regulatory revisions are recommended.

* The NDCS did not fully separate costs of care for infants and toddlers from costs of care for older children served in the same centers. However, the study did provide several findings that bear on the relative costs of care for children under and over three. The high caregiver/child ratios prevailing in infant and toddler classrooms exert a significant upward pressure on costs, although compensating mechanisms often operate to prevent a large differential between costs for infants and toddlers and costs for older children. Directors' opinions are divided as to the relative costs of care for children under and over three. Many centers charge higher fees for infants and toddlers than for older children.

** Too few caregivers in the NDCS were certified solely on the basis of measured competency to test the adequacy of this important potential alternative to required education/training. Competency-based certification is an important avenue for further exploration since the objective of a qualification requirement is, in fact, to ensure appropriate caregiver behavior.

- **Classroom composition**. Group size and caregiver/child ratio are inextricably related and should be regulated jointly in a single classroom composition provision. Because links between classroom composition and indicators of quality are equally strong for three-, four- and five-year-olds, the same regulations should apply to all three age groups. Three policy options emerge as most consistent with NDCS findings.

	Maximum Group Size		Maximum Caregiver/Child Ratio	
	Attendance* Basis	Enrollment Basis	Attendance Basis	Enrollment Basis
Policy A	14	16	1:7	1:8
Policy B	16	18	1:8	1:9
Policy C	18	20	1:9	1:10

An evaluation of the three options indicates the following:

- Policy A would have the most positive impact on the quality of day care provided with public funds.
- Given the importance of group size for quality, all three options would provide higher quality than current FIDCR requirements for four- and five-year-olds. Policy A would provide higher quality than FIDCR requirements for three-year-olds as well.
- All three options would reduce the cost of care relative to current regulations in the range of an estimated minimum of 6 percent for Policy A to a maximum of 16 percent for Policy C. This would allow a potential increase of up to 19 percent in the number of children served at current expenditure levels.
- Between 75 and 90 percent of centers currently providing publicly funded care would be in compliance with all three policy options, without any changes in current operations.
- Depending on the option chosen, between 30 and 60 percent of the centers in the United States not currently serving publicly funded children would immediately be eligible to provide care.

- **Caregiver Qualifications**. Child-related education/training should be required for staff providing direct care to children, and states should make such training available. Requirements should not be framed in terms of either formal education or work experience in day care.

* Differences between attendance-based and enrollment-based regulatory levels assume the 12 percent child absence rate prevailing nationally, and also assume that absent staff will be replaced by substitutes.

Regulations for Infants and Toddlers

For children six weeks to three years of age, the following regulatory revisions are recommended.*

- **Classroom composition**. The current minimum caregiver/child ratio should be maintained (1:4 observed, 1:5 on an enrollment basis). A group size limit should be established for this age group and should be more stringent than that selected for preschool children.

Recommendations for Monitoring Guidelines

Monitoring guidelines for interpreting regulations and assessing compliance must be tied to the regulations themselves, if the regulations are to be meaningful and enforceable. The study found that the stringency of monitoring guidelines can have as much effect on center practices as the content of the requirements themselves. The following recommendations are consistent with NDCS findings.

Classroom composition regulations should be enforced as absolute minimum standards, not as goals. Group size ceilings should be enforced in every group, except during lunch, nap and outdoor play, and the applicable limit should be determined by the age of the youngest child in each group. Caregiver/child ratio should be calculated on a contact-hour basis, adjusting both for age of children and enrollment of part-time staff and children. Ratio minimums should apply to all times of the day and should apply to the center as a whole, giving directors some flexibility to adjust group-to-group staffing to meet children's needs. Group size and ratio regulations should be based on enrollment rather than on attendance, so that enough staff are present to meet ratio requirements when all children are present. Classroom composition should be monitored by direct observation as well as by auditing schedules, in order to validate schedule data. Volunteers should count as staff only if regularly present for at least ten hours per week. Arrangements should be made for substitutes when staff are absent.

* Caregiver education/training data could not be analyzed at a level that would allow the development of a specific regulatory recommendation. However, results of the Infant/Toddler Study suggest that age-specific training should be made available to caregivers of children under three.

Suggestions for Fiscal Policy

Reimbursement rates should be directly related to the cost to the provider of meeting purchasing requirements. Subsidized centers must be supported at a level that allows them to comply with regulations. Reimbursement for personnel costs should reflect the different caregiver/child ratios required for children of different ages. Some support for staffing above minimum requirements should be provided. Reimbursement should be based on enrollment rather than on attendance, because centers cannot adjust staff costs when children are absent.

* * *

The NDCS is described in more detail in the following pages. (A list of NDCS final report volumes and their contents appears on the inside front cover.)

BACKGROUND

The National Day Care Study (NDCS) was a four-year study of center day care, principally for three-, four- and five-year-old children. The study was initiated in 1974 by the Day Care Services Division of the Office of Child Development, now the Administration for Children, Youth and Families (ACYF) of the Department of Health, Education and Welfare.

At the time the study began, there was little scientific evidence that regulation of day care centers affected the quality of care received by children; it was not clear which features of centers are important to quality care; and the costs of maintaining different levels of quality were not known. Answers to such questions were needed to inform federal policy decisions – to set appropriate requirements for day care subsidized with federal funds.

The funding standards in effect when the study began – the Federal Interagency Day Care Requirements (FIDCR) – were the subject of heated debate. Controversy particularly surrounded the FIDCR provisions regarding caregiver/child ratios for classrooms of preschool children, which are more stringent than the licensing requirements of most states. The controversy grew even more heated shortly after the NDCS was initiated, when the FIDCR were incorporated into the federal-state cooperative social service program under Title XX of the Social Security Act. Title XX required states to purchase care only in centers meeting the amended FIDCR – with severe financial penalties for noncompliance.

While many child advocates supported the FIDCR as exemplary quality standards, many providers and state and local welfare administrators viewed the ratio requirement as unnecessarily costly and unrealistic. Congress directed the Secretary of Health, Education and Welfare to prepare a report on the appropriateness of the FIDCR, and, also in 1975, suspended enforcement of the ratio requirement for children under six. The FIDCR Appropriateness Report, submitted in June 1978, concludes that continued federal regulation of day care is appropriate, but that specific provisions of the FIDCR require revision. Results of the NDCS, which was initiated and conducted independently of the FIDCR controversy, are now available to contribute to the formulation of new standards.

ACYF selected Abt Associates to be the NDCS research contractor, with overall technical and administrative responsibility for the study. Stanford Research Institute (now SRI International), was chosen to collect behavioral data on caregivers and children and to test children.

The NDCS consisted of a major Cost/Effects Study of center-based day care for preschool children and two smaller supporting studies: The Supply Study and the Infant/Toddler Study. The cost/effects component focused on the center environment of the pre-

school child, the quality of the child's experience and some of the consequences of that experience both for the child's development and for costs.

The Supply Study, conducted in 1976-1977, was a national telephone survey designed to collect information about enrollment, staffing, costs and other characteristics of centers. Unlike the Cost/Effects Study, the Supply Study was not limited to centers serving primarily preschool children. It was based on a national probability sample of over 3100 centers. The data provide a profile of available care, nationally and by state.

Data from the Supply Study have been used to estimate the degree to which NDCS cost and effects findings can be generalized to centers nationally. The data have also been used to estimate the impact of alternative regulations and monitoring practices on key center characteristics – caregiver/child ratio, group size, staff qualifications, number and characteristics of children enrolled, cost per child, salaries paid by centers, staffing patterns and provision of supplementary services.

The second supporting study of the NDCS focused on day care arrangements for children under three. The Infant/Toddler Study was initiated in 1976, after caregiver/child ratios for infants and toddlers were included as requirements in the Title XX FIDCR. This effort was designed to provide policymakers with three kinds of data not previously available. First, a national sample of centers caring for infants and toddlers were surveyed by telephone to provide data about their distribution and characteristics (e.g., equipment, caregiver/child ratios, group sizes, program schedules and activities). Second, on-site interviews were conducted with a sample of 57 center directors, as well as 145 caregivers and 190 parents in those same centers to gather more detailed data on these center characteristics, as well as opinions about infant and toddler care. Third, 74 caregivers were observed as they cared for infants and toddlers in 38 of the 57 centers visited. These first-hand data were used to develop a profile of caregiver behavior. Caregiver/child ratio and caregiver qualifications were of central concern in the Infant/Toddler Study; center characteristics and caregiver behavior were examined in relationship to these characteristics.

The remainder of this Executive Summary briefly sets forth the main Cost/Effects Study objectives, scope, design, sample and variables; it summarizes findings about quality and costs, and concludes with specific recommendations for policy, monitoring and reimbursement.

Study Objectives, Scope and Design

The major objectives of the study were to determine (1) the impact on the quality of care of different caregiver/child ratios, group

sizes, qualifications of classroom staff, and other regulatable center characteristics; (2) the impact of these factors on the cost of care; and (3) the trade-offs between quality and cost entailed by alternative federal purchasing requirements governing these characteristics of day care centers.

The main cost/effects study was concerned with center-based day care for preschool children. Centers, as opposed to family day care homes and other care arrangements, provide most of the nation's licensed care. Preschoolers represent about 70 percent of the center population – far more than infants and toddlers (15 percent) and school age children (15 percent).

Certain important issues in day care were beyond the NDCS mandate. These included: the merits of day care per se, as compared to parental care in the home; the merits of center care as compared to family day care or in-home care by persons other than parents; determinants of quality of care for school-age, bilingual or handicapped children; the value of specific day care programs or curricula; effects of supplemental services other than child care per se; the question of how many public dollars should be committed to day care; and the proper role of different levels of government in regulating quality of care.

The first of the three phases of the NDCS was devoted to developing the study's design and research methods, and to selecting cities and centers to be studied. The second phase was a year-long study of naturally existing relationships among regulated center characteristics, costs and measures of quality in 64 centers at the three sites. The third phase, on which findings and policy recommendations rest, was a two-part experiment conducted in 57 centers. In the larger part of the Phase III study, conducted in 49 centers at all three sites, caregiver/child ratios were raised, through infusion of new funds, in selected centers, while other centers were left untreated for comparison. In the smaller part of the Phase III study, conducted in 29 classrooms in eight centers operated by the Atlanta Public Schools (APS), children were randomly assigned (within centers) to experimentally established classes with contrasting levels of caregiver/child ratio and staff education.

The Study Sample

During the second and third phases, the study's staff observed and tested several thousand children, interviewed more than 1200 parents, observed and interviewed many hundreds of teachers and aides in several hundred classrooms, and gathered detailed information about programs and costs in a total of 67 centers located in Atlanta, Detroit and Seattle. (Most of the 57 Phase III centers were among the 64 studied in Phase II; however, 10 centers were dropped and 3 new ones added in Phase III, bringing the total studied in one or both phases to 67.)

Atlanta, Detroit and Seattle were chosen as sites both for their geographic, demographic and regulatory diversity, and because their day care centers serve the low-income urban population most relevant to federal day care policy. Centers chosen for study in the three sites were not a random sample but rather were selected largely to maximize representation of policy-relevant centers – those serving or eligible to serve low-income children receiving subsidized care. All types of centers were included in the sample, except for very small proprietary centers which serve almost no subsidized children. A successful effort was made to recruit centers that operated under a variety of non-profit auspices (private agency, church, school, full-day Head Start, independent, etc.) and also centers that operated on a for-profit basis (individual proprietorships and multiple-center businesses). In addition, funding sources for both non-profit and for-profit centers ranged from 100 percent public subsidy, to mixed public subsidies and parent fees, to 100 percent parent-fee centers. Centers that were studied also varied systematically in group size, caregiver/child ratio and caregiver qualifications.

Group sizes in the study centers ranged from eight to 36 children; caregiver/child ratios ranged from 1:4 to 1:16. The group size range between 12 and 24 was especially well represented, as was the ratio range from 1:5 to 1:10. These are the ranges of greatest importance for current policy decisions, spanning levels comparable to those required by current federal regulations to levels approximating those required by many states. Similarly, staff qualifications varied across a wide range. Caregivers in some centers averaged less than a high school education, while in other centers the average caregiver had education beyond the bachelor's degree. Proportions of staff with education or training specifically relevant to young children (e.g., in child development, early childhood education, or day care) ranged from zero to 100 percent. Average experience ranged from less than one year to over five years.

Measurement of Regulatable Center Characteristics

The components of classroom composition – group size and caregiver/child ratio – were defined as follows:

Group Size: The total number of children assigned to a caregiver or team of caregivers. (In most cases, groups occupied individual classrooms or well-defined physical spaces within larger rooms. In a few "open classroom" centers, children were free to move from group to group. In such cases, clusters of children participating in common activities under the supervision of the same caregiver or team of caregivers were considered to be "groups.")

Caregiver/Child Ratio: The total number of caregivers (teachers and aides) responsible for each group, divided by group size.

Caregiver qualifications examined in the NDCS included:

- years of formal education;
- diplomas and degrees;
- presence or absence of education or training in fields related to young children;
- years of day care experience prior to employment at current center; and
- tenure in current center.

Other center characteristics examined in less depth included:

- center program orientation;
- physical space and equipment;
- parent involvement;
- supplemental services to children and families;
- directors' qualifications; and
- continuity of relations between staff and children.

Classroom composition was measured by direct observation in classrooms as well as examination of center records. Background information on classroom staff was gathered through interviews. Other characteristics were assessed through interviews with directors, staff and parents and through observation.

Definition and Measurement of Quality

Three principles underlie the NDCS approach to *defining* quality in day care.

- The well-being of children is paramount.
- Quality day care must not only protect children from harm, but also promote social, emotional and cognitive development.
- Quality must be judged by concrete indicators of the child's experience in day care, rather than by center characteristics of presumed value.

Methods used in *measuring* quality were observation of staff and children in the classroom and administration of standardized tests to children – the Preschool Inventory (PSI) and the revised Peabody Picture Vocabulary Test (PPVT). Changes in children's test scores from fall to spring were used as one indicator of relative develop-

mental gains in different day care environments. Systematic observations were used to answer such questions about the child's daily experience as: How much of their time did the staff spend in close interaction with children (e.g., teaching, nurturing)? In maintaining order? In detached observation or administrative tasks? How much of a child's time was spent in a group activity? In independent, reflective play? Wandering aimlessly? How much verbal initiative did the child show? **NDCS conclusions were based on the convergence of findings from all these methods of measuring quality in day care.**

FINDINGS ON QUALITY

A consistent pattern of findings emerged across different data sets and indicators of quality. Not only did the quality of the human environment in day care vary significantly from center to center, but the differences proved to be related to characteristics of day care centers which can be regulated.

Findings for Preschool Children

Composition of the day care classroom – the number of caregivers and the number of children – is linked to day-to-day behavior of children and caregivers and to children's gains on the PSI and the PPVT. Smaller groups of children and, to a lesser extent, higher caregiver/child ratios (fewer children per caregiver) are associated with more desirable behavior and higher test score gains. Moreover, aspects of caregiver qualifications, especially education/training relevant to young children, are associated with positive classroom behaviors and superior test score gains. Specifically,

- In **smaller groups**, as contrasted to larger ones,
  - lead teachers engage in more social interaction with children and less passive watching of children;
  - children show more cooperation, verbal initiative (giving opinions, preferences, information or comments) and reflective/innovative behavior (considering, contemplating, tinkering or adding a new toy or new idea to an ongoing activity);
  - children show less hostility and conflict and are less frequently observed to wander aimlessly or to be uninvolved in tasks or activities;
  - children make greater gains on the PSI and PPVT.

- In **higher ratio** classes (those with fewer children per caregiver), as contrasted to those with lower caregiver/child ratios,
  - lead teachers devote less time to managing children (commanding and correcting) but more time to center-related activities and to interaction with other adults;
  - children show more task persistence and more interest/participation in center activities, but these relationships are not consistently observed across data sets.
- In classes supervised by **lead teachers with child-related education/training,**
  - lead teachers spend more time in social interaction with children;
  - children show more cooperation, and attend longer to tasks and activities, while at the same time there is a lower frequency of noninvolvement in tasks or activities.
- In centers where the **proportion of caregivers having child-related education/training is higher,**
  - children make greater gains on the PSI.

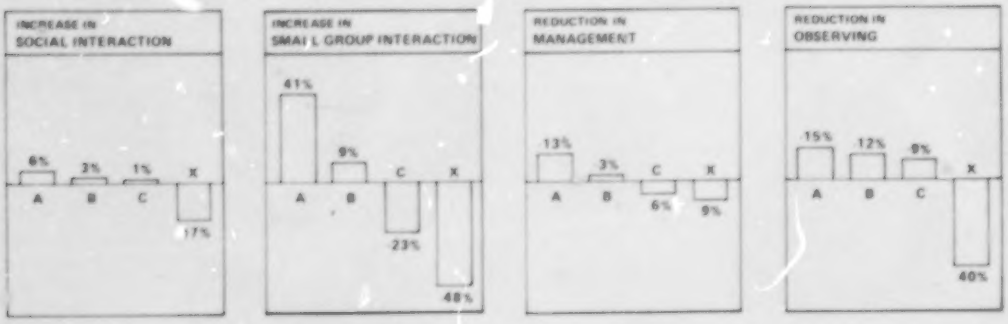
Findings on classroom composition are illustrated in Figure 1. The figure shows differences (relative to the NDCS average) in frequencies of various behaviors and in test score gains found in four types of centers: those complying with Policy A, described earlier (observed group sizes no larger than 14; caregiver/child ratios no lower than 1:7); those complying with Policy B (observed group sizes no larger than 16; ratios no lower than 1:8); those complying with Policy C (observed group sizes no larger than 18; ratios no lower than 1:9); and those out of compliance with Policy C (observed group sizes larger than 18; ratios lower than 1:9). Differences in quality shown in the figure are attributable primarily to differences in group size rather than in ratio. However, as argued later, group size and ratio must be regulated jointly; therefore the policies are framed in terms of both classroom characteristics.

Qualitatively, these findings imply that smaller groups, especially those supervised by lead caregivers with preparation relevant to young children, are marked by activity and harmony. Caregivers are warm and stimulating. Children are actively engaged in learning and get along well with others. Presumably as a consequence of this type of day care experience, children also make rapid strides in acquiring the skills and knowledge tapped by standardized tests. Larger groups, especially those supervised by caregivers without education or training specifically oriented toward young children, present a contrasting picture. Caregivers fall into a passive posture, monitoring activities of many children at once, without active inter-

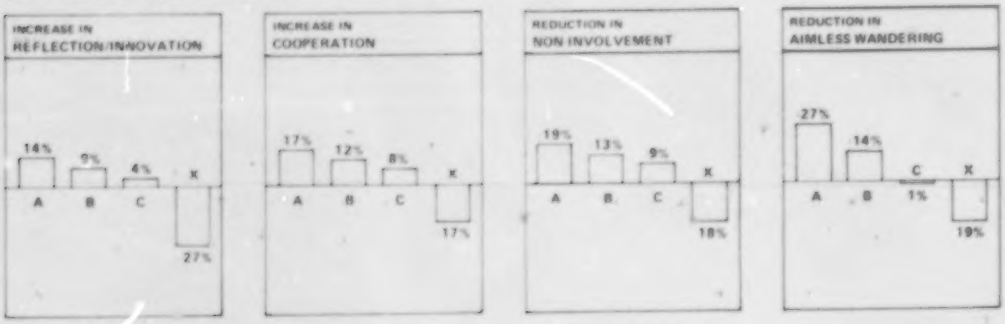
Figure 1 Impact of Alternative Preschool Classroom Composition Policies on Caregiver and Child Behavior and Test Score Gains [a]

(Percentage Increase or Reduction from NDCS Average [b])

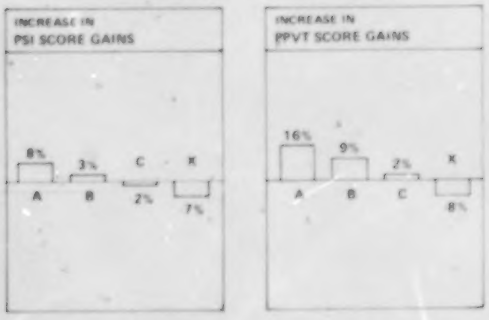
CLASSROOM BEHAVIOR: CAREGIVERS



CLASSROOM BEHAVIOR: CHILDREN



TEST SCORE GAINS: CHILDREN



KEY: (OBSERVED GROUP SIZE AND RATIO)

A: Observed Group Size no larger than 14
Observed Ratio no lower than 1:7

B: Observed Group Size no larger than 16
Observed Ratio no lower than 1:8

C: Observed Group Size no larger than 18
Observed Ratio no lower than 1:9

X: Observed non-compliance with C
Observed Group Size larger than 18
Observed Ratio lower than 1:9

[a] Figure 1 is intended to illustrate the direction of relationships between each policy option and selected measures of quality as well as the consistency of the pattern of results that emerged across different outcome measures. Corrections for imperfect reliability of measures would have resulted in even larger effects than shown here.

[b] Program quality measures were determined with centers in *full compliance*, defined as (1) no centers that violate classroom composition regulatory minimums, (i.e., with groups too large and ratios too low) and, (2) no more than 12 to 15 percent (on average) more caregiving staff per center than the regulatory limit.

vention. In such an environment, some children "get lost." Apathy and conflict are somewhat more frequent than in small groups. Gains on standardized tests are less than they might otherwise be in day care settings.

Links between group size and indicators of quality are equally strong for three-, four- and five-year-old children. Small groups are associated with positive classroom dynamics and higher test scores in all three of the study's diverse sites. Associations between group size and test scores are especially strong in centers serving children from low-income families. Associations between child-related education/training and test scores are also particularly strong in centers serving children from low-income families. However, the latter effects are more variable across sites than those of classroom composition and are especially strong in Atlanta, where a single well-defined training program has wide influence.

Other regulatable center characteristics, though not investigated as intensively as classroom composition and caregiver qualifications, are also associated with measures of quality.*

- The **program orientation** of the center is linked to children's test score gains. In centers where staff express concern for cognitive development, children make greater gains on the PSI than children in other centers. In centers where emphasis is on groups of children rather than on individual development, children have lower gains on the PPVT.
- Children's behavior varies to a minor degree with the **amount of indoor and outdoor space** available to each child. Caregiver behavior and test scores are not related to available space. However, the lack of relationship between space and measures of quality is probably due to the fact that all centers met or exceeded state square footage requirements. The finding does not warrant a conclusion that physical space is irrelevant to quality.

Findings for Infants and Toddlers

The substudy of infant/toddler care showed that classroom composition and caregiver qualifications are linked to quality of care for

* Because the study was designed to highlight costs and effects of classroom composition and caregiver qualifications, other center characteristics could not be studied as effectively as were the major variables. For example, centers were chosen to vary across a policy-relevant range of group sizes; they were not chosen to exhibit wide or systematic variation in physical space arrangements or in program orientations.

infants and toddlers as well as preschoolers.* However, specific factors related to quality are somewhat different for children under and over three:

- **Both group size and caregiver/child ratio** are linked to behavioral indicators of quality for children under three. Relationships to quality are roughly equal in strength for group size and ratio.

Existing caregiver/child ratios are higher, and existing group sizes smaller, in classrooms and centers serving infants and toddlers than in classrooms and centers serving preschoolers. Even within this more stringent range, high caregiver/child ratios and small group sizes are associated with such indicators of quality as the proportion of time which caregivers devote to developmental activities with children as opposed to management of children and routine tasks, the absence of overt distress and apathy among children, and absence of potentially harmful behavior among children.

- **Caregiver years of education** show some relationship with measures of quality in care for infants. Findings about the relationship between specialization in child-related subjects and quality parallel the findings about education, though most of these are not statistically significant.

Relations between caregiver qualifications and indices of quality are less strong and clearcut for infants and toddlers than for preschoolers. Caregivers with more formal education tend to engage in more social interaction with children and more cognitive-language stimulation and conversation than do other caregivers. Children in their care show less evidence of apathy and are less frequently exposed to potential danger.

At any level of formal education, caregivers who have child-related training or who have studied subjects related to young children, also tend to spend more time interacting with and stimulating children, and less time managing children and doing administrative tasks. Children in their care are also less apathetic, and potentially dangerous behavior is less frequent. However, in contrast to the parallel relationships found for education per se, those found for specifically child-related training almost all fail to meet tests of statistical significance.

* As noted earlier, the NDCS did not fully separate costs of care for infants and toddlers from costs of care for older children served in the same centers.

Therefore, these education findings must be carefully interpreted. Caregivers in the small infant/toddler study sample averaged only 12.7 years of education – few had college degrees or any education/training related to young children, and almost none had been trained specifically to work with infants. The sample size was too small and the data too imprecise to allow an analysis that could adequately separate the factors contributing to the education findings.

FINDINGS ON COSTS

Cost findings are of three types: (1) descriptive cost figures collected from the 57 Phase III centers and from the 3100 centers surveyed in the national Supply Study; (2) relationships between regulatable center characteristics and costs; and (3) estimates of the national cost impacts of alternative regulatory policies.

Descriptive Cost Findings

The NDCS measured *resource costs*, or total resources, of different kinds of centers – cash costs plus the estimated cash value of donated goods and services. In-kind contributions averaged 12 percent of the resources of the publicly funded centers but only 2 percent of the resources used by parent-fee centers.

- **The average monthly cost per child was about $157** ($142 cash cost plus $15 in donations) for all centers in all three sites.* Nationally, the average cash expenditure per child was about $136/month, not including any in-kind donations. Cost per child ranged from $80 per month to $281 per month in NDCS centers.
- **NDCS centers spent about 69 percent of their funds on personnel**, 15 percent for occupancy, 11 percent for supplies and 6 percent for other purchases. National figures were closely comparable.
- **NDCS centers received 40 percent of their funds from parent fees**, compared to 70 percent for centers nationally. NDCS centers received 48 percent of their funds from federal, state and local government subsidy and 12 percent from contributions (cash and in-kind). National figures were 29 percent and 2 percent, respectively. These differences reflect the fact that the NDCS sample emphasized centers serving children eligible for subsidy.

* Analysis of center income and expenses was completed in March 1977. Because of inflation, all cost figures understate present costs by 10 to 12 percent. This average monthly cost of $157, in December 1978 dollars, would be about $174.

Costs differed between parent-fee centers, defined as those which receive more than half their total income from parents, and publicly funded centers, which receive more than half their income from sources other than parents, principally government subsidies.

- **The average cost per child in parent-fee centers was lower** than that in publicly funded centers ($130 vs. $176 per month).
- **Average monthly personnel costs in parent-fee centers were $79 per child**, compared to $130 in the publicly funded centers. Parent-fee centers allocated 61 percent of their resources to personnel, whereas publicly funded centers allocated 74 percent.

Differences in costs between parent-fee and publicly funded centers, especially personnel costs, are explained by several factors.

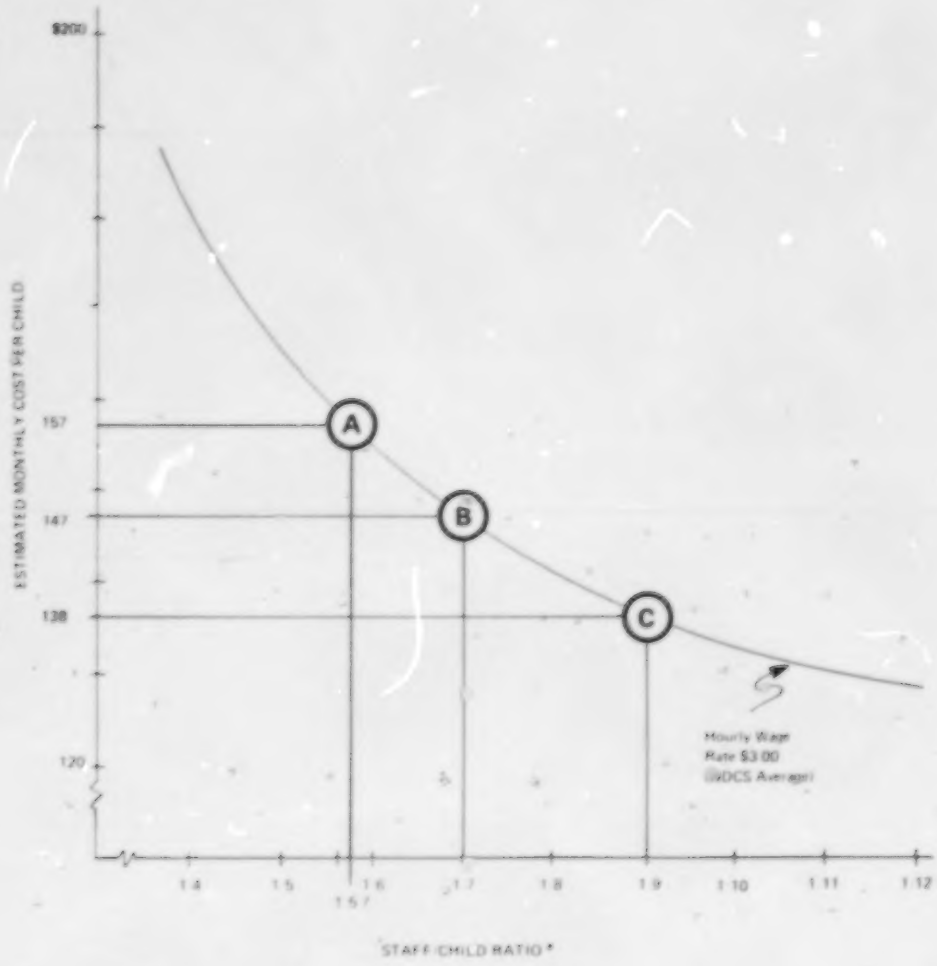
- Publicly funded centers maintain higher caregiver/child ratios.
- Publicly funded centers pay higher wages.
- Publicly funded centers employ more non-caregiving staff.
- Publicly funded centers offer more supplemental services to children and families.
- Publicly funded centers have additional administrative responsibilities.

Impact of Regulatable Characteristics on Center Cost

- **Caregiver/child ratio is the single most important factor determining per-child costs.** For example, if the average number of children per caregiver were increased from the NDCS average of 1:5.7* to 1:7 or 1:9, costs would decrease from $157 per child per month to $147 or $138, respectively.
- **Small differences in the number of children assigned to each caregiver have a larger impact on cost at the higher end of the ratio scale** than at the lower end. For example, a shift from a ratio of 1:5 to 1:7 has much greater cost consequences than a shift from 1:10 to 1:12. This point is illustrated in Figure 2, which shows the relationship between ratio and cost per child in the NDCS centers, given the average hourly wage of $3.00 received by NDCS caregivers.

* This average includes all children and caregivers in NDCS centers, not just those in preschool classrooms. Because infant and toddler classes are included in the average, it is higher than the average of 1:6.8 that prevailed in the preschool classrooms used in the study of quality.

Figure 2 The Impact of Staff/Child Ratio on Monthly Cost Per FTE Child (1976 Dollars)



*Enrollment ratio adjusted for absenteeism.

- **The number of non-caregiving staff affects costs** (this includes staff in administration as well as staff providing supplemental services). Each non-caregiver adds about $5 per month to per-child costs.

- **Group size by itself does not have a significant effect on a center's costs.** Cost per child in a 60-child center organized into four groups of 15 children would be an estimated $1.35 per month higher than if the same center were organized into three groups of 20 children. Group size primarily affects the number of rooms or defined physical areas needed by a center. This number in turn affects occupancy costs, but these represent a small portion of total costs.

- **Caregiver qualifications have an impact on wages, but one so slight that the effect on per-child costs is negligible.** Fairly large differences in education or experience affect caregiver wages by only a few cents per hour. However, the mix of teachers and aides does affect average wages. (The teacher-aide mix also has minor indirect effects on costs associated with group size.)

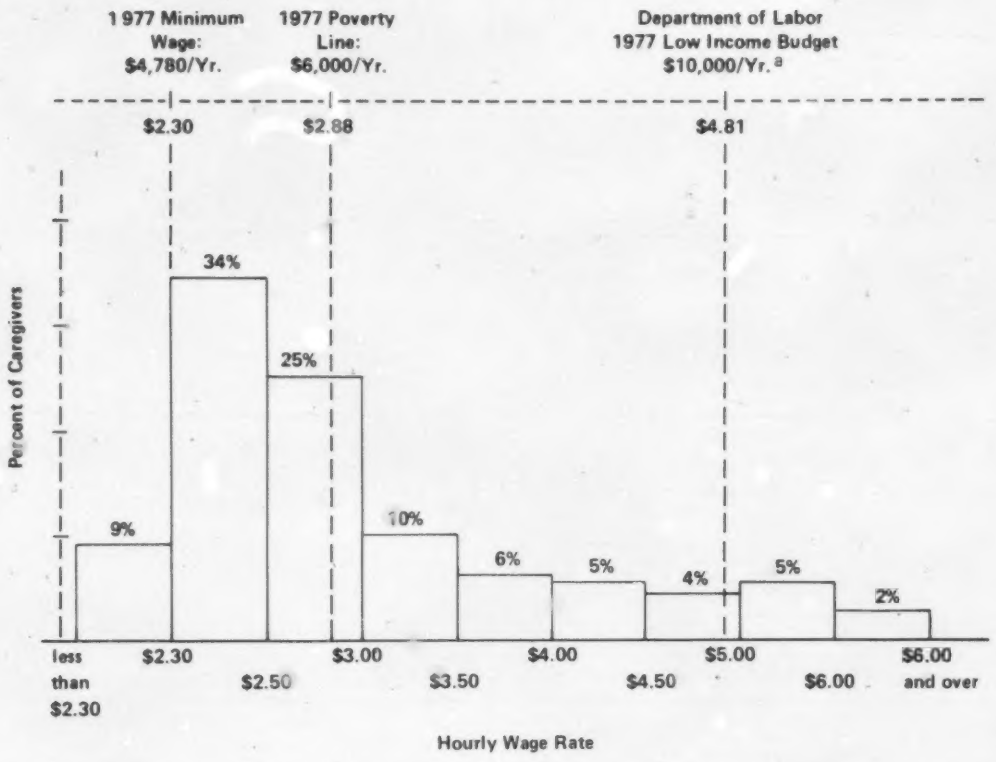
Other Cost-Related Findings

- **Despite the costs associated with higher staff/child ratios, many centers maintain ratios considerably higher than legal minimums.** Nationally, centers serving no subsidized children – therefore subject only to state licensing codes – maintain an average staff/child ratio of 1:7.6. This figure is far higher than the average of 1:12.5 permissible minimum set by the states and is close to the ratio of 1:5.9 maintained by subsidized centers, which are subject to stringent federal funding standards.

- **Nationally, caregiver wages are extremely low.** Almost two out of three caregivers' annual earnings fall below the poverty line for a family of four (Figure 3). Ninety-two percent of caregivers' annual earnings fall below the Department of Labor's 1977 low-income budget of $10,000 for a family of four. This profile of wages confronts policy makers with a dilemma. Wages can be raised only by decreasing staff/child ratios or by serving fewer children or by increasing the outlay of public resources.

A simulation model was developed using Supply Study data to estimate the impact of alternative regulatory policies on centers nationally. The results of this analysis were utilized in developing the policy recommendations that follow.

Figure 3 Distribution of Caregiver Wage Rates, 1977



[a] For a family of four.
Source: NDCS Supply Study Data

RECOMMENDATIONS FOR FEDERAL REGULATIONS

Recommendations for Preschool Children

- **The same staff/child ratio and group size regulations should be applied to three-year-olds as are applied to four- and five-year-olds.**

Relationships of ratio and group size to indicators of quality are equally strong for three-, four- and five-year-olds enrolled in

the study's preschool classrooms. The additional administrative costs of maintaining separate regulations for children of different ages within the 3-5 range do not appear to be justified.

- **The staff/child ratio requirement for three-, four- and five-year-old children should be no more stringent than 1:7.**

Substantial costs are entailed by maintaining the current FIDCR-mandated ratio of 1:5 for three-year-olds. Cost is particularly sensitive to ratio variations at this end of the ratio range. However, within the ratio range studied in the NDCS, variations in ratio of only two or three children per adult do not significantly affect the quality of day care experience for three-, four- and five-year-old children.

- **The group size requirement for three-, four- and five-year-old children should be no more lenient than 18 children per group.**

Because group size shows strong and pervasive relationships to quality measures for preschoolers, group size standards should under no circumstances be relaxed relative to current FIDCR levels, which average about 18 for three-, four- and five-year olds – a level maintained by about 90 percent of currently operating centers.

- **The group size limit should be twice the maximum number of children allowed per caregiver by the staff/child ratio requirement.**

Unless the group size limit is a whole multiple of the maximum number of children allowed per caregiver, centers are forced to exceed either the group size or the ratio limit. For example, if maximum group size were set at 16 and minimum staff/child ratio at 1:7, the ratio requirement would prohibit centers from operating with classes of two caregivers and 15 or 16 children. Centers would be forced either to operate below the group size ceiling (i.e., to maintain classes of 14 or fewer children with two caregivers) or above the ratio floor (i.e., to maintain classes of 15 or 16 children with three caregivers).

For preschoolers, the only whole multiple that is consistent with study findings and current center practice is a multiple of two. Setting identical limits on group size and number of children per caregiver (a multiple of one) would force all centers to maintain very small single-caregiver classrooms, whereas larger, two- and three-caregiver classrooms currently predominate. Setting a multiple of three or more would mean allowing classes of 21 or more children, assuming that ratio were set at 1:7 – an increase in group

size relative to the current FIDCR, entailing a decline in quality of care. Alternatively, if group size were set at 18, a multiple of 3 or more would entail a costly ratio of 1:6 or higher.

- The alternative preschool staff/child ratio and group size requirements which should be considered for future regulations are limited to three basic policies.*

  Policy A: Group size shall be less than or equal to 14 children and staff/child ratio shall equal or exceed 1:7.

  Policy B: Group size shall be less than or equal to 16 children and staff/child ratio shall equal or exceed 1:8.

  Policy C: Group size shall be less than or equal to 18 children and staff/child ratio shall equal or exceed 1:9.

The three policy options are the only ones qualitatively consistent with study findings and mathematically consistent with the above recommendations – a minimum staff/child ratio of 1:7, a maximum group size of 18, and group size set at double the maximum number of children per caregiver. The three options have the following properties:

- Policy A has the best impact on children. Policy B has a moderate impact, and Policy C is the least effective of the three from the standpoint of quality.
- All three reduce cost per child below the level reflected in current policy.
- Policy C reduces costs the most. While this cost reduction potentially allows more children to be served, such an increase may not occur when states control the allocation of the funds saved, as is the case under Title XX.
- Policy C represents a quality standard slightly lower than that which parents currently purchase in unsubsidized centers.
- None of the options requires hiring large number of new caregivers. Policy C requires the fewest new hires but also creates a potential problem of "excess" staff in some centers.
- A substantial number of non-subsidized centers would meet any of the three sets of requirements and would be immediately eligible to receive public funds.

* The three policy options are stated in terms of group sizes and ratios based on actual attendance in the classroom. Because some absenteeism is to be expected, group size and ratio requirements based on scheduled enrollment would use different figures. A table converting attendance to enrollment figures is presented in a later note.

- Policy C offers slightly more potential for an increase in socioeconomic integration, because its less stringent requirements widen the range of parent-fee centers eligible to serve subsidized children, and because its lowered costs could allow more parents to purchase care in subsidized centers. However, Policy C could also lead to an increase in socioeconomic *segregation* if states chose to place additional low-income children in centers that are currently heavily subsidized, or if lowered reimbursement rates cause some parent-fee centers to stop serving subsidized children.
- Not all states would experience equal cost savings under any policy option, since there are large variations in currently prevailing ratios across states.

Table 1 summarizes the estimated quality, cost and market implications of the alternative preschool classroom composition policies.

- **Persons providing direct care for preschool children should have participated in a specialized program of child-related education/ training.**

Specialized training of caregivers contributes to quality of care. Training, required in the 1968 FIDCR but made optional in the Title XX FIDCR, should be a requirement in the revised regulations. However, centers and individual caregivers should be given adequate time to comply, and steps should be taken to guarantee availability of appropriate training. In addition, because formal education and day care experience per se show only scattered and inconsistent relationships to measures of quality, requirements should not be framed in terms of degrees, years of formal education or years of previous day care experience.

Recommendations for Infants and Toddlers

- **Future federal regulations should maintain the currently required staff/child ratios for children under three years of age and should incorporate a group size requirement more stringent than the requirement for preschool children.**

Both staff/child ratio and group size are associated with indicators of quality in care for infants and toddlers – even within the range of high ratios and small groups that prevail in classes for children under three. The current stringent FIDCR ratio requirement of 1:4 (1:5 on an enrollment basis) should therefore be re-

Table 1 Comparison of Estimated Quality, Cost and Market Implications of Alternative Preschool Classroom Composition Regulations [a]

Criterion	Policy A	Policy B	Policy C
PROGRAM QUALITY full compliance[b]			
Quantitative Indicators[c]			
Caregiver Behavior:	+ 6 to 41%	+ 3 to 12%	+ 1 to −9%
Child Behavior:	+14 to 27%	+ 9 to 14%	+ 9 to −1%
Child Test Score Gains	+ 8 to 16%	+ 3 to 9%	+ 2 to −2%
Qualitative Summary (relative to FIDCR)	Moderately to Substantially Higher	Slightly to Moderately Higher	Same to Slightly Lower
PROGRAM COST SAVINGS[d]			
full compliance	6 - 9%	9 - 12%	13 - 16%
[- current monitoring practices; elimination of under-compliance only]	[1 - 4%]	[6 - 9%]	[10 - 13%]
	[0 - 2%]	[1 - 3%]	[2 - 4%]
Potential Increase in Number of Children Served			
full compliance	7 - 10%	11 - 14%	16 - 19%
[-current monitoring practices; elimination of under-compliance only]	[1 - 4%]	[7 - 10%]	[11 - 14%]
	[0 - 2%]	[1 - 3%]	[2 - 4%]
PERCENT SUBSIDIZED CENTERS INITIALLY IN COMPLIANCE:			
– with staff/child ratio	72%	79%	83%
– with group size	77%	84%	89%
CERTIFICATION OF NON-SUBSIDIZED CENTERS	30-40% Eligible	40-50% Eligible	50-60% Eligible
POTENTIAL FOR CHANGE IN SOCIOECONOMIC MIX	Small	Small to Medium (Direction of Change Depends on State Administrative Practices)	Medium
IMPACT ON STATE-LEVEL COST PER CHILD			
•Current High Compliance States	8-10% Savings	10-14% Savings	15-20% Savings
•Current Low Compliance States	7-11% Increase	2-6% Increase	Slight Savings to Slight Increase

[a] This table should be viewed as a *substantially simplified interpretation* of the various data sets discussed in Chapter Eight of *Children at the Center*. The purpose is to provide a summary overview of the various factors that must be weighed in choosing among the three classroom composition policy options.

[b] Program quality measures were determined with centers in *full compliance*, defined as (1) no centers that violate classroom composition regulatory minimums (i.e., with groups too large and ratios too low) and, (2) no more than 10 to 15 percent (on average) more caregiving staff per center than the regulatory limit.

[c] These are simple summary ranges of each of the indicators shown in Figure 1 and should be considered primarily illustrative of the relative difference between policies.

[d] The primary cost comparison in terms of savings and additional children served is with centers in *full compliance* (as defined in *b* above). The impact of alternative monitoring practices – current practice (which does not limit the number of staff that centers may maintain above the regulatory limit), or simply elimination of under-compliance is shown in square brackets.

tained for infants and toddlers. A group size limit of eight or twelve should be imposed for infants, and a limit of twelve should be imposed for toddlers.

Results of the infant/toddler study also suggest that child-related education/training is desirable for providers who care for children under three. Although such specialization could not be statistically linked to specific subject matter, the small number of caregivers with backgrounds in child-related areas may have prevented detection of a relationship such as the one which clearly emerged for preschoolers. A prudent course for future federal policy action might well be to provide age-specific education or training to infant/toddler caregivers.

Other Regulatable Center Characteristics

In addition to classroom composition and staff qualifications, NDCS findings shed light on other potentially regulatable center characteristics, although the findings do not lead to firm policy recommendations regarding these characteristics.

- **Parent participation** in center governance is an expressed desire of many parents in subsidized centers. In addition, parents express a desire for communication with staff and access to records regarding their children. Some ten percent of parents in subsidized centers actually participate in policymaking. However, many parents indicate that their jobs limit the time they have available for further involvement. Future federal policy should at a minimum guarantee, in subsidized centers, parental access to information about their children and opportunities to participate in center decisionmaking; however, policy should not require centers to place unrealistic time demands on working parents.
- **Space requirements** are already enforced by the states. The NDCS found few systematic differences in quality associated with variations in space above state-established limits. The study thus provides no evidence to justify either relaxation of state requirements or imposition of a federal standard more stringent than those of the states.
- **Supplemental services**, required by the current FIDCR, are provided in diverse ways, depending heavily on availability of such services through community agencies outside the day care center. Future regulations should define precisely the responsibilities for supplemental services to be borne by centers, and states should ensure that the centers are reimbursed on a cost-related basis. A system should be considered in which needs for supplemental services are determined on a center-by-center basis and in which each center is reimbursed for supplemental services on the basis of the particular needs of its children and families.

- **Program orientation and curriculum** are linked to particular outcomes, in that centers emphasizing individual development and school readiness produce greater gains on standardized tests. However, choice of such specific goals has traditionally been the prerogative of parents and providers. The findings do not in themselves justify imposition of a standardized curriculum through federal regulations.

- **Director qualifications** are substantial in most cases; most directors have completed some college work and have extensive experience in day care. The study was not able to distinguish effects of director qualifications from those of staff qualifications generally. Thus the study provides no basis for requiring specific amounts or kinds of education/training different from that of classroom caregivers.

Recommendations for Regulatory Language and Monitoring Guidelines

Unless regulations are stated in unambiguous language and accompanied by specific monitoring guidelines, inconsistencies in interpretation and enforcement will result. If regulatory language is ambiguous or monitoring guidelines are lenient, strict regulations, e.g., regulations mandating high staff/child ratios and small groups, may have little effect on center practices. Much less strict regulations may have major effects when framed in precise language and accompanied by stringent monitoring guidelines. The following recommendations are designed to help give federal child care purchasing standards the specificity needed for consistent interpretation and enforcement. The advantages of Policies A, B, and C that were shown in Table 1 above assume adoption of the regulatory language and monitoring rules recommended below.

- **The staff/child ratio and group size limits in future regulations should be stated in terms of absolute minimum standards, rather than in terms of what should "normally" prevail.**

Provisions of the current FIDCR state that staff/child ratios should "normally" be above certain minimum limits. Use of the term "normally" leaves potentially wide latitude for deviation from the stated standards, as well as wide differences in enforcement practices from state to state. The term should be eliminated in favor of absolute minimum standards, defined more fully by the recommendations below.

- **Staff/child ratio requirements should be stated in terms of scheduled enrollment and scheduled assignments of staff to child supervision and should apply to all times of the day and all days of the week.**

- **For determination of compliance with ratio requirements children should be counted in terms of the number of hours they are scheduled to attend the center, and staff should be counted in terms of the total number of hours each spends working directly with children.**
- **Centers should be required to make contingency plans for obtaining substitute classroom staff in the case of caregiver absence.**
- **Time spent by volunteers working with children should be counted toward satisfying ratio requirements only if the volunteer regularly spends ten hours or more per week working in the classroom, or is acting as a substitute for a regular caregiver who is absent.**
- **Compliance with staff/child ratio should be determined at the center level and not on a classroom-by-classroom basis.**

To determine the number of staff hours needed to comply with the ratio requirement, the number of hours of scheduled attendance should be computed for all children in each regulatory age bracket (infants/toddlers, preschoolers, school-age children). The number of staff hours required for each age bracket should then be calculated by applying the relevant ratio standard. Finally, the total number of staff hours required for the entire center should be calculated by summing across age brackets. NDCS data show that this method of calculation produces a reasonably high correspondence between scheduled ratios (adjusted for absences) and ratios actually observed in the classroom. Basing the ratio requirement on scheduled child attendance (rather than actual attendance, which fluctuates unpredictably from day to day) ensures that centers must employ enough staff to meet the requirements when all children are present.* The recommendations regarding substitute and volunteer staff ensure that ratios will not be allowed to fall below the standards because of staff absences.

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* Policies A, B, and C were stated earlier in terms of average *attendance* – numbers of children and caregivers expected to be present in the classroom on a typical day. This was done to facilitate comparison with the study's findings on quality which were based on group sizes and staff/child ratios observed in the classroom. To reach the targeted group size figures, scheduled group sizes can be slightly larger than those stated earlier, because a child absence rate of 12 percent (the national average) can be assumed. Similarly, to reach targeted ratios, schedule-based required ratios can be lower than those stated earlier. (No allowance need be made for staff absences, since substitutes must be available whenever regular staff are not present.) As indicated in the summary of Findings and Recommendations, the policies stated in terms of enrollments would be:

Policy A: Group size 16; staff/child ratio 1:8
Policy B: Group size 18; staff/child ratio 1:9
Policy C: Group size 20; staff/child ratio 1:10.

Setting required ratios at the center rather than classroom level has several advantages. It reduces the amount of information needed for monitoring. More important, it allows center staff and directors flexibility to maintain different ratios in different classes, e.g., to maintain higher ratios for younger children or children with special needs. This flexibility also helps make it possible for centers to comply with the ratio standard at all times of the day and week.

- **Group size should be monitored on a group-by-group basis.**
- **The group size limit should be strictly enforced except during lunch, nap and playground activities.**

Because group size is critically related to quality, a ceiling should be established for the size of every group. The applicable ceiling should be determined by the age of the youngest child in the group.* Although group size should be monitored strictly, some flexibility in judgment must be used for open-classroom centers, where several activity groups are present in a single room. In addition, group size fluctuates over the day. Groups tend to be small during arrival and departure. Some centers merge groups during lunch and nap and on the playground. Except for these periods, the group size requirement should be enforced at all times.

- **Both an examination of schedules of child and staff hours and observation visits should be used to assess compliance.**

NDCS data show that center records, kept on a contact-hour basis, are sufficiently accurate for most monitoring purposes. However, direct observation should be used periodically to validate centers' reports. If wide discrepancies between scheduled and observed numbers of children and staff are found in repeated monitoring visits, centers should be considered out of compliance. Study data also show that scheduled group sizes significantly underestimate actual group sizes when classes are merged, which may occur either regularly or sporadically. Acceptability of this practice must be determined on a case-by-case basis.

Suggestions for Title XX Fiscal Policy

An examination of issues pertaining to day care appropriations, funding and rate-setting was not within the scope of the NDCS. Title XX fiscal policies and practices are generally the concern of

* In order to avoid a severe notch effect, centers should be allowed, for short periods of time, to count some small number of children (three or four) between 30 and 36 months of age as three-year-olds for determination of *group size* compliance.

the states. A number of observations on these issues, however, are supported by the results of the study or are corollaries to the policy recommendations presented above.

- Reimbursement rates should cover the out-of-pocket costs of meeting all federal, state and local regulations. Rates should be set for each center individually, based on an analysis of its costs.
- Reimbursement rates should reflect differences in per-child costs resulting from differences in required ratios for children of different ages.
- Reimbursement rates should be based on enrollment rather than attendance. Up to five days absence per child per month should be an allowable cost and be reimbursed.
- Centers should not be reimbursed for staff costs in excess of 30 percent above the level needed to meet minimum center staffing requirements.

Regulations cannot be fair and effective unless rate-setting policies provide centers with sufficient funds to comply. Centers should not be forced to operate out of compliance in order to survive financially, nor should centers be inequitably reimbursed for the services they provide. Reimbursement should be based on the actual costs incurred by each center. Costs must be ascertained individually for each center; no general formula allows sufficiently precise prediction, because the determinants of cost are too complex. Reimbursement rates should take account of the differential staff costs entailed by different age compositions of centers and the associated differences in staff/child ratio requirements. Rates should be based on numbers of children enrolled rather than in attendance, because centers cannot adjust their staff costs (i.e., lay off or refuse to pay staff) in response to day-to-day fluctuations in attendance. Finally, though centers should be supported in maintaining quality beyond the minimum standards, efficient and equitable distribution of public funds requires that "overcompliance" be restricted; an average of 10 to 15 percent (maximum 30 percent) more caregivers than required to meet staffing standards would be consistent with current practices.

In addition to the above suggestions, which link regulatory and reimbursement policies, an additional suggestion for fiscal practice arises from study findings.

- Reimbursement rates should be set high enough to enable centers to pay all staff at least the minimum wage.

In light of the finding that substantial numbers of caregivers are paid below the federal minimum wage, reimbursement policies

should specifically address this gap. This is a minimal step, for even minimum wage rates are not sufficient to lift most day care staff, many of whom are sole or primary income-earners in their families, above the poverty line.

OVERVIEW OF NDCS FINAL REPORT VOLUMES

Results of the National Day Care Study and its two major supporting studies, The National Day Care Supply Study and the National Infant/Toddler Day Care Study, are presented in a five-volume final report. Contents of these volumes are as follows.

Volume I

Children at the Center: Summary Findings and Policy Implications of the National Day Care Study presents in summary form the major findings and implications for federal day care policy of the National Day Care Study, a four-year study of the effects of regulatable center characteristics on the quality and cost of day care for preschoolers. Volume I serves both as a self-contained volume for the policymaker and as the foundation for the detailed presentation of results in Volumes II, III and IV. (Executive summaries of Supply Study and Infant/Toddler Study findings are included as appendices to Volume I.)

Volume II

Research Results of the National Day Care Study is a companion volume to *Children at the Center*. Volume II documents the analyses and results of the NDCS for the technical reader who seeks a more thorough understanding of the study from a research perspective. Volume II thus provides the quantitative support for the findings and policy conclusions reported in *Children at the Center*.

Volume III

Day Care Centers in the U.S.: A National Profile 1976-1977, the final report of the National Day Care Supply Study, is based on data gathered from a national random sample of over 3000 day care centers, stratified by state. Summary information is presented on characteristics of children and families served, center programs, staff, finances and regulatory compliance. Discussion of results is augmented by over 150 statistical tables.

Volume IV

Technical Appendices to the National Day Care Study is a compendium of technical papers supporting the most important conclusions of the study. These papers form the basis for the summaries in Volumes I and II. NDCS appendices are bound in four sections as follows.

Volume IV-A, *National Day Care Study Background Materials*, contains three papers, each of which establishes a distinctive context for the NDCS: a literature review focused on effects of group care and regulatable characteristics of the day care environment; case studies of the history and current practice of day care in the three NDCS sites (Atlanta, Detroit, Seattle); and a review of child development issues relevant to the NDCS from the perspective of black social scientists.

Volume IV-B, *National Day Care Study Measurement and Methods*, presents individual reports on a series of technical tasks supporting the principal analyses of the effects of key center characteristics on children. Among the topics covered are: variance components analysis of the dependability of observation and test measures; analysis of alternative measures of classroom composition; psychometric analysis of the NDCS test battery; and analyses of several other more peripheral instruments used in the study. A detailed report on site and sample selection and the issue of generalizability concludes the volume.

Volume IV-C, *National Day Care Study Effects Analyses*, also a series of individual technical reports, begins with a presentation of the major effects analyses based on the two behavioral observation instruments, and then moves to a detailed treatment of the development and use of adjusted test score gains. The links among caregiver and child behavior, child test scores and other dependent measures are explored. Also detailed are results of the Atlanta Public School (APS) controlled substudy and the APS replication substudy. Results of a special survey of parents of subsidized children taken during Phase III are presented, as are the results of analysis of the impact on children of other center characteristics, such as physical space and program orientation.

Volume IV-D, *Center Day Care for Infants and Toddlers: An Exploratory Policy Study*, is the final report of the second major supporting study of the NDCS. It presents a profile of national and regional day care for children from birth to three years, based on a nationally representative sample survey of 1500 centers. The study also provides an analysis of selected center characteristics and classroom processes, based on in-person interviews with staff and parents, as well as systematic classroom observations, in a 54-center subsample.

Volume V

National Day Care Study Documentation and Data gives a brief overview of NDCS data collection instruments and data files. Part A consists of the instruments themselves, including interview and data collection forms, observation systems and cognitive tests. Part B consists of data dictionaries: these describe every variable in the NDCS analytic data files. Part C provides codebooks for the data files. Parts B and C are available on computer tapes, which are readable independent of specific computer systems. Note that computer tapes are available only from Abt Associates.

Copies of the final report may be ordered from:

- EXECUTIVE SUMMARY (ONLY)
  Day Care Division
  Administration for Children, Youth and Families
  Office of Human Development Services
  Department of Health, Education and Welfare
  400 6th Street, S.W.
  Washington, D.C. 20024

- EXECUTIVE SUMMARY, Volumes I - IV
  ERIC Document Reproduction Service
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- EXECUTIVE SUMMARY, Volumes I - V
  Abt Associates Inc.
  55 Wheeler Street
  Cambridge, MA 02138

Earlier NDCS publications available from ERIC (hard copy or microfiche) are:

National Day Care Study First Annual Report, Volume I: An Overview of the Study [order number ED 131 928], *Volume II: Phase II Design* [order number ED 131 929], and *Volume III: Information Management and Data Collection Systems* [order number ED 131 930] (Cambridge, MA: Abt Associates, 1976).

National Day Care Study Second Annual Report [order number ED 147 016] (Cambridge, MA: Abt Associates, 1977).

National Day Care Study Preliminary Findings and their Implications [order number ED 152 114] (Cambridge, MA: Abt Associates, 1978).